



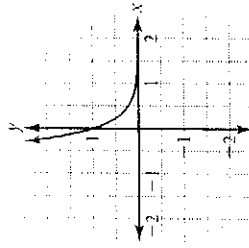
Standardized Test Practice

6.6 The Natural Base, e

TEST TAKING STRATEGY

Restate each question to verify that you answered it correctly.

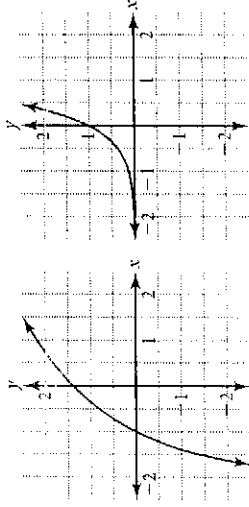
1. **Multiple Choice** What is the equation of the function graphed below?



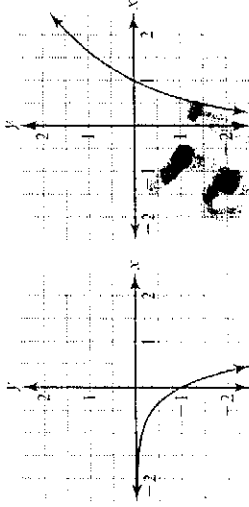
- (A) $y = e^x$ (B) $y = e^{3x}$
(C) $y = e^{-3x}$ (D) $y = \log_3 x$

2. **Multiple Choice** Which graph represents the function $y = 2 \ln x$?

(A) 



(C) 



3. **Multiple Choice** How much will \$200 invested at 3% interest, compounded continuously, be worth after 5 years?

- (A) \$232.37
(B) \$230.00
(C) \$32.00
(D) \$30.00

Quantitative Comparison In Exercises 4–7, choose the letter of the statement below that is true about the quantities in Columns I and II.

- A The number in Column I is greater.
B The number in Column II is greater.
C The two numbers are equal.
D The relationship cannot be determined from the given information.

Column I	Column II
4. e^0	$\ln 1$
5. $\ln 0.884$	$\frac{1}{e^{100}}$

the value of x

6. $4^x = 10$ | $5^x = 12$

- (A) (A) (B) (C) (D)

7. the y -intercept of $y = 2e^{3x}$ | the y -intercept of $y = 2e^{-3x}$

- (A) (A) (B) (C) (D)

8. **Multiple Choice** How long will it take \$400, to be worth \$800, if it is invested at 6% interest, compounded continuously?

- (A) 5.8 years (B) 11.6 years
(C) 16.7 years (D) 66.7 years

9. **Multiple Choice** Which of the following are in ascending order?

- (A) $e^4, e^0, \ln 0, \ln 2$
(B) $\log 1.2, \ln 1, 6, e^2$
(C) $e^1, \ln 4, \log 2, e^{2.1}$
(D) $10^2, \ln 2.1, 7, e^4$

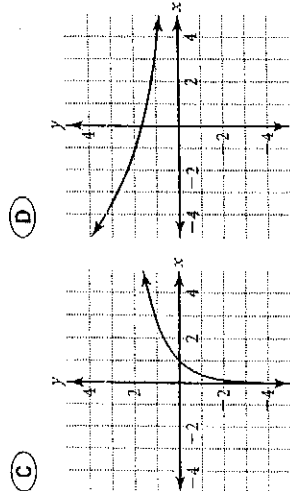
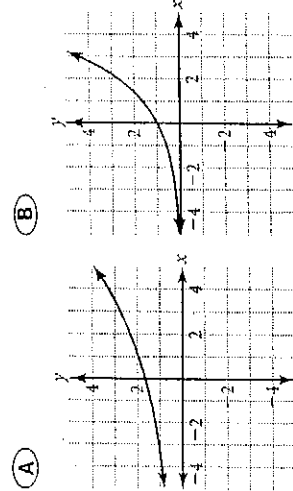
10 **Multiple Choice** Solve the equation $6^{x-2} = 216$, for x .

- (A) 2.3 (B) 3
(C) 5 (D) 36

11 **Multiple Choice** What point describes the intersection of the graphs of $y = 2 \log x$ and $y = -x + 12$?

- (A) (3, -9) (B) (4, -8)
(C) (10, 2) (D) (50, -38)

12 **Multiple Choice** Which graph shows the function $2e^{\frac{-1}{5}x}$?



13 **Multiple Choice** Which point describes the solution to this system of equations?

- $$\begin{cases} y = e^x \\ y = -3e^x + 4 \end{cases}$$
- (A) (9, -3) (B) (-3, 0)
(C) (4, 3) (D) (0, 1)

14 **Multiple Choice** What value of x makes the logarithmic equation true?

- $\ln x = 1 + \ln(3x - 4)$
- (A) $x = \frac{3e - 1}{4e}$ (B) $x = \frac{4e}{3e - 1}$
(C) $x = \frac{e}{3e - 4}$ (D) $x = 0$

On January 17, 1995, an earthquake struck Osaka, Kyoto, and Kobe, Japan, injuring more than 36,000 people and causing an estimated \$100 billion dollars of damage. The quake released about 3.98×10^{22} ergs of energy. Find the earthquake's magnitude on the Richter scale. Round your answer to the nearest tenth

$$M = \frac{2}{3} \log \frac{E}{10^{11.8}}$$